REMARKS

Claims 1, 4-14, and 17-30 are pending in the application. Claims 1, 4, 9, 10, 14, 17, 27, 28 and 30 have been amended. Reconsideration of these claims is respectfully requested.

I. 35 U.S.C. § 112, Second Paragraph

With respect to the first paragraph on page 2 of the Office Action, dated September 21, 1995 (the Office Action), the examiner has misread the corrections that were made to the specification in the Applicant's amendment, dated July 5, 1995. In that amendment, starting at the bottom of page 2, there are clear instructions to amend lines 11 and 12 of page 12 of the original specification of the current invention so that it should read: "As a result, the voltage level of node **VSUM** is set by the selection of the sizes and properties of the devices involved in constants $\mathbf{K}_1$ - $\mathbf{K}_3$." Applicant respectfully requests that the Examiner reexamine these amendments to the specification.

With respect to the phrase "the threshold voltage", several of the claims have been amended in order to overcome the examiner's rejections under 35 U.S.C. § 112, second paragraph. Independent claims 1, 4, 14, 17 and 27 have been amended to define the threshold voltage, denoted by the symbol V_T, as the minimum acceptable voltage of V_{CC}. In operation, if the voltage output of the main power supply drops below the threshold voltage, the disclosed invention will switch to an alternate source of power. The amendments to the claims make clear that the term V_T is a predetermined voltage level related to V_{CC}.

With respect to the term "base emitter voltage", several of the claims have been amended. Independent claims 1, 4, 14, 17, and 28 now require that each current source have at least one transistor. The base emitter voltage, denoted by the symbol V_{BE}, is defined in terms one of these transistors. The claims, as amended, now recite an element, a selected transistor, and an attribute of that element, V_{BE}. This should overcome the examiner's rejection in paragraph 4 on page 2 of the Office Action.

With respect to the specific rejection of claim 9 concerning the phrase "set between selected voltages." That phrase has been changed. As per the examiner's suggestion, the new phrase -- predetermined voltages-- has been substituted for "selected voltages".

With respect to the specific rejection of claim 10 concerning the location of the cascode stage, this claim has been amended. In claim 10, the cascode stage is now required to have at least a first and second connections with the first connection being connected to the summing node and the second connection being connected to one of the four current mirrors. This should overcome the examiner's rejection of claim 10.

With respect to claim 27, the phrases "the summing node voltage level is responsive to the current supplied" and "a preselected power supply voltage" have been deleted. Also, claim 30 has been amended to depend on claim 1.

Although these amendments to the claims add additional elements, there have been very few, if any, substantive changes. The central purpose of all of the amendments in this amendment is to overcome the examiner's rejections under § 112, second paragraph. No new matter is added by these amendments.

II. 35 U.S.C. § 102(b)

The examiner has rejected claims 1, 14, and 27-30 as being anticipated by Bingham. These rejection are traversed. Claims 1, 14 and 28 all require that the current sources supply current according to a bandgap equation. This equation is listed in claims 1, 14 and 28. As was stated in the previous amendment, the examiner has failed to point out any teaching or suggestion in Bingham for supplying currents according to this bandgap equation as recited in claims 1, 14, and 28. As such, Bingham cannot be said to suggest or anticipate the current invention as described in claims 1, 14, and 28 because the examiner has failed to meet the burden of pointing out every feature (including how the currents are supplied) or explaining how these features are suggested by the prior art.

In the Office Action, on page 3, the examiner states:

> Bingham discloses, in Figs. 1 and 3, a circuit comprising: "a first circuit (20 of Fig. 1)"; "a direct current sum bandgap voltage comparator (36 and 56 of Fig. 3)" having "a summing node (52 of Fig. 3)", "a plurality of current sources (110 and 116 of Fig. 3)" and "an indicator circuit (56 of Fig. 3)"; "a switching circuit (40 and 48 of Fig. 3)"; "a primary power supply (14 of Fig. 1)"; and "a secondary power supply (22 of Fig. 1)", all connected and operating similarly as recited by Applicant.

Nowhere in the above quotation is a discussion of how the "plurality of current sources (110 and 116 of Fig. 3)" supplies current according to a bandgap equation.

Bingham discusses the functionality of transistors 110 and 166 starting on line 38 of column 5:

> The first stage of the differential comparator **36** is comprised of the n-channel MOS differential pair, transistors **72** and **76**, fed by a current mirror p-channel MOS transistor pair, transistors **98** and **104**. A bias for the first stage **66** is provided by the resistors **86** and the transistor **92**. The second stage **68**, comprising transistors **110** and **116**, provides additional voltage gain through the differential comparitor **36**. The transistors **92** [and] **116** may be considered to be a second current source through the first stage **66** and the second stage **68**, respectively.

As stated above, Bingham characterizes transistors 110 and 116 as being part of the second stage 68 of differential comparator 36. Bingham, however, does not specify that the currents supplied by those transistors are supplied according to a bandgap equation. In summary, the examiner has not pointed to any specific teaching in Bingham that discloses supplying currents according to a bandgap equation. No equation such as the one in claims 1, 14, and 28 is found in Bingham. Further, the examiner has not explained how the teachings of Bingham suggest supplying currents as described in the above claims. If the examiner believes that Bingham teaches this particular feature, Applicant respectfully request that the examiner point out such teaching or suggestion. As such, Bingham cannot be said to anticipate or suggest the current invention.

In last paragraph on page 3 of the Office Action, the examiner states:

> With respect to Claims 1, 14 and 18, since the language discussed by Applicant cannot at all be understood, no weight can be given thereto.

After having been amended, claims 1, 14, and 28 are now structurally sound and should be examined by the examiner after having considered the arguments in this and the previous amendment.

Claim 27, as amended, is also patentably distinct over the Bingham reference. Claim 27 requires "a power supply having a predetermined threshold voltage level which defines the minimum acceptable voltage level of the power supply". Claim 27 goes on to require the inclusion of an indicator circuit which:

> . . . is responsive to changes in the summing node voltage level and generates at an output a logical signal at one state **when the summing node voltage level is greater than the predetermined threshold voltage level and generates the logical signal at the output at another state when the summing node voltage is less than the predetermined threshold voltage level.**

In summary, claim 27 requires that the voltage at a summing node be constantly compared to a fixed threshold voltage level.

This is in comparison to Bingham which teaches that the voltage produced by the primary power supply is compared to the voltage produced by a battery, and not a fixed threshold voltage level as is required in the present invention. As stated in Bingham on line 23 of Column 3, and with reference to Figure 1:

> By introducing the reference potential appearing at terminal 12 to the battery backup circuit 10 through the reference input 28, the **relative magnitudes of the potentials appearing at the first input and the second input are compared within the battery backup circuit 10 and switches are appropriately turned on and off to conduct the greater of the potentials appearing at inputs 24 and 26** through an output 30 to the load input 16. [emphasis added]

Thus, instead of comparing the primary power supply voltage to a fixed, known value, Bingham compares the power supply voltage to the voltage emanating from a battery.

Comparing the primary power supply voltage to a fixed threshold value, as is done in the present invention, is superior to the corresponding mode of operation as disclosed in Bingham. By using the voltage level of a battery as a reference, the device in Bingham continually drains current from the battery. While the amount of current drainage may be small, the cumulative effect of this current drain over years of operation can shorten the battery's useful life.

The device disclosed in claim 27 does not require current to be drained from a battery in order to determine when the primary power supply voltage has dropped below a minimum threshold. Thus, if a battery is being used as a backup power source, current from the battery does not have to be drained in order to operate the voltage comparator. As such, Bingham teaches away from the invention as described in claim 27, and does not anticipate or suggest the current invention.

With respect to claims 29 and 30, the requirement that the current sources be current mirrors is patentably distinct over Bingham. Claims 4-13 and 17-26 have similar restrictions, and the examiner has deemed them allowable. As such, the examiner

should allow claims 29 and 30, which were indicated as allowable if amended to overcome the rejections under 35 U.S.C. §112, second paragraph, for the same reasons that he allowed claims 4-13 and 17-26.

III. Claims 4-13 and 17-26

Claims 4-13 and 17-26 have been amended to overcome the rejections under 35 U.S.C. §112. Consequently, the claims are now felt to be in allowable form.

CONCLUSION

In light of the above amendments and arguments, the examiner is urged that the subject application is patentable over Bingham and is now in condition for allowance.

The examiner is invited to call the undersigned at the below-listed telephone number, if in the opinion of the examiner, such a telephone conference would expedite or aid in the prosecution and the examination of this application.

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Respectfully submitted,

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